

BOROUGH



OF KENDAL.

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# ANNUAL REPORT

OF THE

MEDICAL-OFFICER-OF-HEALTH,

FOR THE

*YEAR ENDING DECEMBER 31st, 1909.*

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ROBERT MUSGRAVE CRAVEN, D.P.H., CAMB.,


MEDICAL-OFFICER-OF-HEALTH FOR THE WESTMORLAND COMBINED  
COUNTY DISTRICTS.

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KENDAL :

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—  
1910.



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BOROUGH OF KENDAL.—1909.

Table of Death-rates from All Causes, from Phthisis and Infectious Diseases, since the passing of the Registration Act, 1837.  
This Tabulation was begun by the late Dr. David Page.

Year	Deaths from			Annual Rate of Mortality per 1000 from				Percentage to total Deaths of		Deaths from								Meteorology	
	Estimated Population June 30th	All Causes	Phthisis (Consumption)	Seven principal Zymotic Diseases	All Causes	Corrected for Age and Sex distribution	Phthisis	Seven principal Zymotic Diseases	Phthisis	Measles	Scarlet Fever	Diphtheria and Membranous Croup	Whooping Cough	Typhus Fever	Typhoid Fever or Enteric Fever	Other Fevers	Diarrhoea and Dysentery	Mean Temperature of the Air	Rainfall in Inches
1838	11800	339	68	54	28·7	..	5·8	4·0	20·0	..	..	..	7	..	..	11	1	44·81	45·739
1839	11800	414	51	149	35·1	..	4·3	12·6	12·3	..	97	..	8	3	..	20	2	46·09	57·965
1840	11800	343	56	83	29·1	..	4·7	7·0	16·3	34	16	..	..	13	..	11	2	46·03	48·227
1838-40		365·3	58·3	95·3	31		4·9	7·9	16·2	11·3	37·6	..	5	5·3	..	14	1·7	45·643	50·644
1841	11800	264	48	22	22·4	..	4·1	1·9	18·1	..	4	..	14	2	..	1	1	46·17	53·854
1842	11800	268	47	34	22·8	..	4·0	2·9	17·5	..	5	..	..	17	..	12	..	47·01	48·072
1843	11800	286	64	26	24·2	..	5·4	2·2	22·0	5	..	..	..	12	..	4	5	46·86	56·307
1844	11800	309	37	35	26·2	..	3·0	2·9	12·0	22	..	..	..	7	..	2	4	45·58	43·012
1845	11800	336	52	53	28·5	..	4·4	4·5	15·5	..	3	..	..	6	..	4	3	45·47	53·346
1841-45		292·6	49·6	34	24·8		4·2	2·9	17·0	5·4	2·4	..	2·8	8·8	..	4·6	2·6	46·218	50·918
1846	11800	427	56	99	36·2	..	4·7	8·4	13·1	3	23	..	1	40	..	14	11	48·44	52·365
1847	11800	370	57	73	31·4	..	4·8	6·2	15·4	..	47	..	..	16	..	5	5	46·67	52·197
1848	11800	340	53	26	28·8	..	4·5	2·4	15·5	9	1	..	..	10	..	2	4	46·32	56·314
1849	11800	276	33	30	23·4	..	2·8	2·5	11·9	2	..	..	2	13	..	8	7	46·62	48·068
1850	11800	239	25	16	20·2	..	2·1	1·3	10·4	..	..	..	5	6	..	3	2	46·64	49·576
1846-50		330·4	44·8	69·2	28		3·8	4·2	13·2	2·8	14·2	..	1·6	17	..	6·4	5·8	46·938	51·704
1851	11800	310	42	57	26·2	..	3·5	4·8	13·5	6	35	..	..	5	..	4	7	46·35	47·561
18·2	11800	283	27	62	23·8	..	2·2	5·2	9·5	..	44	..	..	9	..	2	6	47·55	65·354
1853	11000	250	38	30	21	..	3·2	2·5	15·2	..	5	..	12	5	..	2	5	45·56	39·455
1854	12150	243	37	20	20	..	3·1	1·7	11·1	..	3	..	1	1	..	3	3	46·68	46·133
1855	12000	259	29	52	21·6	..	2·4	4·3	11·2	34	3	..	..	11	..	1	2	45·98	34·54
1851-55		269	34·6	44·2	22·5		2·9	3·7	12·1	8	18	..	2·6	6·2	..	2·4	4·6	46·42	46·608
1856	12000	235	36	13	19·6	..	3·0	1·0	15·3	..	7	..	..	4	..	1	..	48·054	39·482
1857	12000	230	33	15	19·2	..	2·7	1·2	14·3	2	2	..	..	6	..	1	..	49·799	38·501
1858	12050	259	34	37	21·5	..	2·8	3·1	13·1	2	..	..	9	10	..	6	2	48·172	40·226
1859	12050	298	41	57	24·7	..	3·4	4·7	13·7	32	1	..	9	11	..	1	3	48·47	48·29
1860	12050	234	32	6	19·4	..	2·6	·5	13·6	1	..	..	3	2	..	..	..	45·903	57·004
1856-60		251·2	35·2	25·6	20·8		2·9	2·1	14	7·4	2	..	4·2	6·6	..	1·8	1	48·079	44·701
1861	12070	239	22	17	19·8	..	1·8	1·4	9·2	6	..	1	2	1	..	2	4	47·82	60·697
1862	12000	261	71	27	20·6	..	2·9	5·3	10·5	3	..	..	2	1	..	2	7	47·04	50·117



1861-65	12900	276.6	32.6	29.2	22.4		2.6	2.4	11.8	10		.2	3.2	11.2	.2	3.4	3	.8	2	5.2	47.807	52.052
1866	12900	269	38	28	21	..	3.0	2.2	14.1	10.4		..	4	..	..	8	5	3	3	5	48.125	60.393
1867	12900	322	29	74	25	..	2.2	5.7	9	23		..	18	47	1	1	3	..	1	3	47.277	47.305
1868	13100	261	36	34	19.9	..	2.9	2.6	13.8	13		..	4	15	..	..	1	3	..	11	49.077	52.745
1869	13200	277	37	11	20.9	..	2.8	.8	13.3	4		..	1	3	..	1	..	1	2	3	47.508	55.498
1870	13400	337	49	47	25.2	..	3.7	3.5	14.5	13.9		..	20	1	1	12	..	2	1	10	48.32	43.09
1866-70		233.2	37.8	38.8	22.4		2.9	2.9	12.9	12.8		..	9.4	13.2	.4	4.4	1.8	1.8	1.4	6.4	48.061	51.806
1871	13453	263	37	13	19.5	..	2.7	.9	14.1	4.9		..	..	..	..	5	..	2	2	4	47.81	50.245
1872	13477	260	24	27	19.2	..	1.7	2.0	9.2	10.4		..	1	..	..	12	..	7	3	2	49.81	69.178
1873	13502	263	29	13	19.4	..	2.1	.9	10.6	4.9		..	..	..	2	3	..	2	1	5	48.322	49.365
1874	13527	302	22	42	22.3	..	1.6	3.1	7.3	13.9		..	17	6	6	6	..	5	..	2	47.98	55.105
1875	13551	272	32	15	20.0	..	2.3	1.1	11.7	5.5		..	..	1	2	7	..	1	..	4	48.645	46.22
1871-75		272	28.8	22.0	20.3		2.1	1.6	10.5	7.9		.4	3.6	1.4	2	6.6	..	3.4	1.2	3.4	48.513	54.022
1876	13577	259	17	14	19.0	..	1.2	1.0	6.5	5.4		4	..	2	..	..	..	2	..	6	48.43	51.885
1877	13602	225	31	22	16.5	..	2.2	1.6	13.7	9.7		..	14	3	..	2	..	..	..	3	47.784	65.775
1878	13627	305	32	19	22.3	..	2.3	1.4	10.4	6.3		..	..	..	..	7	..	5	..	7	47.84	43.758
1879	13652	253	41	5	18.5	..	3.0	.3	16.2	2		..	1	1	..	1	..	..	..	2	44.41	43.18
1880	13677	333	44	91	24.3	..	3.2	6.6	10.2	27.3		..	20	56	1	5	..	7	..	2	48.188	45.06
1876-80		275	33	30.2	20.1		2.3	2.1	11.4	10.1		.8	7	12.4	.2	3	..	2.8	..	4	47.33	49.931
1881	13702	255	29	15	18.6	..	2.1	1.0	11.7	5.8		1	1	6	3	..	..	3	..	1	45.524	59.77
1882	13779	265	34	17	19.2	..	2.5	1.2	12.8	6.4		..	1	5	2	1	..	5	..	3	47.448	59.82
1883	13848	253	42	16	18.2	..	3.0	1.1	16.6	6.3		..	4	..	..	2	..	2	..	8	47.187	51.51
1884	13922	272	43	42	19.6	..	3.0	3.0	15.8	15.4		..	9	..	1	..	..	19	..	13	48.238	44.47
1885	13956	256	36	17	18.2	..	2.5	1.2	14	6.6		..	2	..	1	11	..	..	..	3	45.36	45.83
1881-85		260	36.8	21.4	18.7		2.6	1.5	14.2	8.1		.2	3.4	2.2	1.4	2.8	..	5.8	..	5.6	46.751	52.28
1886	14071	228	37	10	16.2	..	2.6	.7	16.2	4.6		..	..	2	..	3	..	1	..	4	46.444	53.98
1887	14145	260	38	11	18.3	..	2.6	.7	14.6	4.6		..	..	..	..	2	..	1	..	5	46.712	52.37
1888	14221	243	19	18	17.0	..	1.3	1.2	7.8	7.4		1	3	2	8	..	..	4	..	..	45.964	43.04
1889	14226	313	25	31	21.1	..	1.7	2.2	7.9	9.9		..	19	..	2	1	..	3	..	6	46.020	43.15
1890	14373	253	21	15	17.6	..	1.4	1.0	8.3	5.9		..	..	..	3	2	..	4	..	6	45.396	48.13
1886-90		259	28	17	18.0		1.9	1.1	10.9	6.4		.2	4.4	.8	3.2	1.6	..	2.6	..	4.2	46.105	44.134
1891	14424	282	25	14	19.5	..	1.7	.9	8.8	4.8		..	2	..	..	4	..	2	2	8	47.5	53.17
1892	14402	284	26	23	19.6	..	1.8	1.9	9.1	9.8		..	20	..	1	..	..	..	1	3	45.88	55.75
1893	14379	233	15	31	16.2	..	1.0	2.1	6.4	13.3		..	2	4	2	3	..	5	..	15	50.184	45.79
1894	14356	233	19	23	16.2	..	1.3	1.6	7.7	9.8		..	..	5	1	1	..	2	..	14	47.375	54.11
1895	14332	269	12	43	18.7	..	.8	3.0	4.4	15.9		..	23	..	..	7	..	1	..	12	46.846	47.92
1891-95		260	13	27	18.04		1.3	1.9	7.2	10.7		..	9.4	1.8	.8	3	..	2	.6	10.4	47.557	51.34
1896	14308	208	20	11	14.4	14.04	1.3	.7	9.6	5.2		..	..	1	1	2	..	2	..	5	48.532	48.09
1897	14283	249	11	31	17.4	16.57	.7	2.1	4.4	12.4		..	7	..	5	9	..	1	..	9	48.897	54.64
1898	14256	224	16	27	15.7	15.51	1.1	1.8	7.1	12.0		..	16	..	6	..	..	1	..	4	49.823	52.83
1899	14230	171	16	11	12.01	11.71	1.1	.7	9.3	6.4		..	..	2	3	1	..	1	..	6	48.363	49.28
1900	14203	249	14	12	17.5	16.8	.9	.8	5.5	4.8		..	1	..	2	6	..	..	..	1	48.365	56.84
1896-1900		220	15.4	18.4	15.4	15.01	1.02	1.2	7.1	8.1		..	4.8	.6	3.4	3.6	..	1	..	5	48.796	52.33
1901	14176	227	19	14	16.01	15.61	1.3	.9	8.4	6.1		..	8	..	1	..	..	..	..	5	48.792	39.88
1902	14149	200	22	8	14.1	13.78	1.5	.5	11.0	4.0		..	..	4	..	..	..	..	..	4	46.66	36.22
1903	14149	234	14	32	16.5	16.09	.99	2.19	6.0	13.2		..	10	8	3	8	..	1	..	1	46.65	67.96
1904	14149	192	17	7	13.6	13.23	1.20	.42	8.8	3.1		..	..	4	..	..	..	2	..	1	45.79	48.37
1905	14149	214	13	9	15.1	14.9	.91	.6	6.0	3.7		1	..	2	1	4	..	..	..	1	46.60	42.75
1901-05		213	17	14	15.06	14.72	1.18	.92	8.04	6.02		.4	3.6	3.6	1.0	2.4	..	.6	..	2.4	46.80	47.00
1906	14149	199	13	10	14.06	13.69	1.06	.42	7.5	3.0		..	..	..	..	6	..	..	..	4	47.93	54.11
1907	14149	187	10	2	13.21	12.87	.70	.07	5.5	.5		..	..	1	..	1	..	..	..	1	45.96	53.93
1908	14149	200	13	18	14.13	13.81	.91	1.05	6.5	7.5		..	4	1	..	10	..	..	..	3	47.48	55.15
1909	14149	179	19	..	12.65	12.36	.84	..	6.7	..		..	..	..	..	..	..	..	..	1	45.74	58.03

Year.	Births.	Rate per 1000.	Deaths.		Deaths under 1 year per 1000 registered births.
			Under 1 year.	Over 1 and under 5 years.	
1861	428	35.5	60	...	140
1862	402	32.9	56	...	139
1863	431	34.9	61	...	141
1864	443	35.5	50	...	113
1865	466	36.9	57	...	122
1866	466	36.9	68	...	146
1867	439	34.0	65	..	148
1868	468	35.8	40	...	85
1869	487	36.9	62	...	127
1870	438	32.8	73	...	166
1871	505	37.5	53	...	105
1872	462	33.9	61	...	132
1873	480	34.9	64	...	134
1874	496	35.7	66	54	134
1875	429	31.6	53	33	123
1876	483	34.2	67	20	138
1877	432	31.8	58	28	134
1878	506	37.1	71	40	140
1879	428	30.1	49	22	114
1880	484	33.8	56	93	113
1881	425	31.0	48	38	113
1882	457	33.3	61	34	135
1883	491	35.7	60	20	122
1884	462	33.4	57	30	123
1885	440	31.8	59	40	134
1886	422	30.6	54	22	127
1887	441	31.9	62	19	140
1888	405	28.9	41	29	101
1889	476	34.0	70	37	147
1890	368	25.5	57	28	154
1891	449	31.1	65	21	144
1892	415	28.5	50	31	120
1893	429	29.2	56	26	130
1894	387	26.3	50	17	129
1895	422	28.5	70	33	165
1896	392	26.4	38	19	96
1897	378	25.3	60	23	158
1898	393	26.2	48	31	122
1899	345	24.2	37	12	107
1900	353	24.8	36	17	101
1901	324	22.8	45	22	138
1902	331	23.3	34	15	102
1903	332	23.4	41	27	123
1904	371	26.2	36	15	97
1905	307	21.7	36	11	117
1906	305	21.7	35	15	106
1907	318	22.5	24	8	75
1908	287	20.3	39	15	135
1909	280	19.8	22	10	78

## NOTES TO ACCOMPANY THE BOROUGH MORTALITY TABLE.

*From all Causes, Phthisis, and Infectious Diseases, since the passing of the Registration Act, 1837.*

### SMALL-POX.

1.—*Epidemic* in 1838-39. The death of a child aged 5 years occurred on the 19th January, in Stricklandgate ; but the outbreak would appear to have commenced in October, when the death of an infant, six months old, was recorded on the 7th of that month in Allhallows Lane, and to have continued until March, 1839, the last death being on March 10th of a man aged 40, residing in Branthwaite Brow. Of the 54 deaths, 16 were under 1 year, 18 between 1 and 5 years, 17 between 5 and 20 years, 3 above 20 years.

2.—*Epidemic* in 1845-46. A child aged 5 years died on February 3rd in Stricklandgate, and two other deaths occurred in March, but the chief fatality occurred in the months of November and December, and the last death on the 3rd of June, 1846. Of the 44 deaths, 8 were under 1 year, 19 between 1 and 5 years, 7 between 5 and 20 years, 10 of 20 years and upwards.

3.—Small outbreak 1888, commencing with importation of the disease from Lancashire and Yorkshire, where it was epidemic.

4.—Small outbreaks in 1893, 1902-03, and 1905.

### MEASLES.

*Epidemic* in 1840, 1844, 1855, 1859, 1867, 1870, 1874, 1877, 1880, 1884, 1888, 1889, 1892, 1895, 1898, and 1903.

### SCARLET-FEVER.

1.—*Epidemic* in 1839-40. It commenced in May, 1839, reached its height in the last week in October and the beginning of November, and subsided in February, 1840. Of the 113 deaths, 87 were below 5 years, 23 between 5 and 10 years, 3 between 10 and 20 years.

2.—*Epidemic* in 1846-47, 1851-52, 1862-63, 1867-68, and 1880. (The building of an infectious diseases hospital for the Borough was determined on after the epidemic of 1880, and the Sanatorium was first used in September, 1882, when scarlet-fever patients were admitted.)

3.—An outbreak in 1893, but of a mild type. Mortality, four.

4.—An outbreak in 1894, again of a mild type. Commenced in the first week in July, attained its height in the week ending 13th October (22 cases notified in that week), and gradually diminished, seven cases only being notified in the last fortnight of the year. Mortality, 5.



5.—An outbreak in 1900. 92 known cases, of which 88 were isolated in the Sanatorium. Mortality, two.

6.—An outbreak in 1901, which commenced in the middle of November, continued through 1902 and into 1903; three cases only were notified during the last four-and-a-half months of the year 1903. Mortality, twelve in 1902 and 1903.

7.—An outbreak in 1904, very similar to that in 1894 but more extensive. There were a number of cases in the first five months of the year, but in the third week in June the outbreak became severe; attained its highest point in the second week in October, and by the end of November had diminished to small proportions. Mortality, four.

#### DIPHTHERIA.

The absence of any deaths certified from this disease before the year 1861 may be due to such deaths having been included under the common appellation of Croup.

1.—*Epidemic* in first two months of 1888, during and after a dense fog which hung over the town from January 8th to 20th.

#### WHOOPING-COUGH.

High mortalities in the years 1841, 1853, 1858-59, 1862-63, 1870, 1872, 1885, 1903, 1908. The prevalence of this disease in 1885, was during the last eight months of the year. The 11 deaths were all of children under five years of age, as also were the three deaths in 1886, and two deaths in 1887. All in 1908 were under two years.

#### FEVER.

1.—This term includes all forms of continued fever. The death-rate was almost annually heavy down to 1860; since that date there has been a very perceptible decline (Waterworks Company in 1849; Main Sewage Works completed by the end of 1873). As typhoid or enteric fever was not distinguished from typhus-fever until 1840-41, and not generally in England before 1851, most of the deaths appearing under the column of typhus-fever may be presumed to have been typhoid or enteric fever. The first return of death from this latter disease was in 1856, and no return of typhus-fever has been made since 1868. The death-rate under typhus-fever was annually constant from 1839 to 1863; and from 1868, since when no such return has been made, the mortality from enteric-fever has been continuous till 1904, except in the years 1877, 1879, 1885, 1892, 1900, 1901, and 1902. For the last five years there have been no deaths attributed to fever.



The *constant prevalence* of fever was greatly accentuated in the years 1839-40, 1842-43, 1846-47, 1849, and 1858. The absence of mortality under records "other fevers" since 1873, tends to the belief that such returns formerly should have been made as of enteric-fever. *The decrease of mortality from fever* (including typhus, enteric, and others) may be gathered from the following table, which shows the number of deaths from fever in each of fourteen periods of five years :—

Period of years	...	1839-40	1841-45	1846-50	1851-55	1856-60
Mortality	...	58	67	117	43	47
Period of years	...	1861-65	1866-70	1871-75	1876-80	1881-85
Mortality		29	25	23	14	29
Period of years	...	1886-90	1891-95	1896-1900	1901-05	1906-09
Mortality		13	13	5	3	0

2.—From January to April, 1884, inclusive, there was a serious outbreak of enteric-fever, affecting solely the north end of the town, due apparently to a curious combination of meteorological circumstances, with an inadequate ventilation of the main sewer in that district, and individual instances of faulty house-drain connections.

3.—A considerable outbreak in 1893, mainly between the middle of August and the middle of October, following a long period of exceptionally dry weather, during which the town was supplied by the Water Company with water from the river Mint.

#### DIARRHŒA.

An almost constant small mortality.

*Exceptional.* 1.—In 1846, during fatal epidemic of so-called "typhus-fever."

2.—In 1865, 1868, 1870, and in 1884, during exceptional heat in July and August. In 1884 the exceptional heat continued into September, and was accompanied by mortality.

3.—No diarrhœa mortality in the year 1888, the first time in twenty-eight consecutive years.

4.—Diarrhœa was prevalent in August and September, 1893, hot weather with showers following a very long period of drought. Water supply of the town was temporarily derived from the river Mint.

#### CHOLERA.

No registered return. The last epidemic in this county was during 1831-32, and therefore before the passing of the Registration Act.

# BOROUGH OF KENDAL.

*Annual Report of the Medical-Officer-of-Health for the  
Year ending December 31st, 1909.*

Area...	...	..	...	...	2,622 Acres.
Population (census 1901)			...	...	14,183
Inhabited houses		...	...	...	3,096
Average population per house			...	...	4·5

## ESTIMATE OF POPULATION IN 1909.

	Under 5 yrs.	Under 15 yrs.	Under 25 yrs.	Under 65 yrs.	Over 65 yrs.	All Ages.
Population estimated on June 30—						
Males ... ..	769	1511	1244	2703	320	6547
Females ... ..	746	1494	1566	3345	451	7602
Recorded death-rates per 1000 esti- mated to be living in age-period ...	21·12	·99	1·06	10·74	99·87	12·65

BIRTHS	..	...	{ Males Females }	{ 141 139 }	Persons	280
Annual Rate of Births per 1000 of the Population	...					19.78
DEATHS	...	...	...	...	...	179
Recorded Annual Rate of Deaths per 1000					...	12.65
But corrected for age and sex distribution...					...	12.36
Comparative Mortality Figure (England and Wales, 1000)	}			...	...	852
Excess of Registered Births over Deaths	...				...	101

## GENERAL MORTALITY IN 1909.

The total number of deaths registered in the year 1909 was 179. This is after deducting the deaths of non-residents who died in Public Institutions within the Borough, and adding the deaths of those residents who died in Public Institutions in other places. Estimating the population at 14,149, this is equal to a death-rate of 12·65 per 1000 of the population, or, corrected for age and sex distribution, 12·36 per 1000.

## ZYMOTIC MORTALITY.

There were no deaths attributed to any zymotic disease.

## MORTALITY FROM PHTHISIS.

The number of deaths due to phthisis was 12, or equal to a rate of 84 per 1000.

## ANALYSIS OF DEATH-RATE.

## INFANT MORTALITY.

Of the total number of deaths, 22 or 12·2 per cent. were under one year.

The deaths of children under one year were at the rate of 78 per 1000 births.

## DEATHS OF INFANTS UNDER ONE YEAR, PER 1000 BIRTHS.

1891-95	1896-1900	1901-05	1906	1907	1908	1909
<hr/> 137	<hr/> 117	<hr/> 115	<hr/> 106	<hr/> 75	<hr/> 135	<hr/> 78

## CHILD MORTALITY.

Thirty-two deaths, or 17 per cent. of the total deaths, were of children under five years of age, being at the rate of 2·2 per 1000 of the population.

## DEATH-RATE UNDER FIVE YEARS PER 1000 OF THE POPULATION.

1891-95	1896-1900	1901-05	1907	1908	1909
<hr/> 5·8	<hr/> 4·4	<hr/> 3·9	<hr/> 2·2	<hr/> 3·8	<hr/> 2·2

DEATH-RATE UNDER FIVE YEARS PER 1000 ESTIMATED TO BE LIVING  
AT THAT AGE PERIOD.

1891-95	1896-1900	1901-05	1907	1908	1909
<hr/> 47·1	<hr/> 40·2	<hr/> 37·1	<hr/> 21·1	<hr/> 35·6	<hr/> 21·12

The following table gives the number of deaths of children under one year and under five years respectively :—

Year.		No. of deaths under one year.		No. of deaths between one and five years.
1881-85	...	mean 57·4	...	31·2
1886-90	...	mean 56·8	..	27
1891-95	...	mean 58·2	...	25·6
1896-1900	...	mean 43·4	...	20·4
1901-05	...	mean 38·4	...	18
1906	...	35	...	15
1907	...	24	...	8
1908	...	39	...	15
1909	...	22	...	10

#### ADULT MORTALITY.

The number of deaths between 5 and 65 years of age was 70, being at the rate of 4·9 per 1000 of the total population, 5·9 per 1000 estimated to be living at that age-period, and constituting 39·1 per cent. of the deaths at all ages.

Death-rate per 1000 of the population estimated to be living at that age period :—

1893-95	1896-1900	1901-05	1906	1907	1908	1909
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
7·6	6·6	6·9	7·1	6·2	6·1	5·9

#### OLD-AGE MORTALITY.

The number of deaths of persons of 65 years of age and upwards was 77, being at the rate of 5·4 per 1000 of the total population, 99·87 per 1000 estimated to be living at that age period, and constituting 4·3 per cent. of the deaths at all ages.

Death-rate per 1000 of the population estimated to be living at that age period :—

1893-95	1896-1900	1901-05	1906	1907	1908	1909
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
88·5	89·5	96·3	83	105	94·6	99·8



The following table gives the Birth Rates; the Recorded Annual Death Rates per 1000 from all causes, and from the several Epidemic Diseases during the year 1909.

		ANNUAL RATES PER 1000 LIVING.										
	Births. (1)	Deaths.		Principal Epidemic Diseases. (4)	Small- pox. (5)	Measles. (6)	Scarlet Fever. (7)	Diph- theria. (8)	Whooping Cough. (9)	Fever. (10)	Diarrhoea. (11)	Deaths under one year per 1000 Births. (12)
		Crude. (2)	Cor- rected. (3)									
England and Wales ...	25·6	14·5	14·5	1·12	0·00	0·35	0·09	0·14	0·20	0·06	0·28	109
76 Great Towns ...	25·7	14·7	15·6	1·42	0·00	0·48	0·11	0·15	0·24	0·06	0·38	118
142 Smaller Towns ...	24·8	13·9	14·5	1·08	0·00	0·33	0·09	0·16	0·17	0·06	0·27	111
Rural England and Wales	25·6	14·5	13·6	0·80	0·00	0·21	0·06	0·14	0·16	0·06	0·17	98
County of Westmorland	19·6	12·5	...	0·16	0·00	0·03	0·01	0·06	0·03	0·03	0·01	71
Borough of Kendal ...	19·7	12·65	12·36	0·00	0·00	0·00	0·00	0·00	0·00	0·00	0·07	78
Rural District of S. Westmorland	19·18	11·92	11·31	0·05	0·00	0·00	0·00	0·00	0·00	0·05	0·00	72



## BIRTH-RATE.

The total number of births registered was 280 against 287 in the previous year, and the birth-rate was therefore 19·78 per 1000 of the estimated population.

The births and birth-rates have been as follows :—

1881-95	...	mean	455	...	32·8
1886-90	...	mean	422	...	29·6
1891-95	...	mean	420	...	29·2
1896-1900	...	mean	372	...	26·04
1901-95	...	mean	324	...	22·8
1905	...		307	...	21·7
1906	...		305	...	21·55
1907	...		318	...	22·48
1908	...		287	...	20·21
1909	...		280	..	19·78

The figures given above, showing only 287 births in 1908 and 280 in 1909, are evidence of a decreasing birth-rate; a rate which has reached the lowest point ever recorded in Kendal. It is now nine years since the last census enumeration, and if my estimate of the present population be excessive, that is 14,149, the birth rate may be higher than stated above. A year ago I spoke of the decreased birth-rate as “one of those statistical phenomena which we meet with from time to time,” but now it is more phenomenal.

## GENERAL MORTALITY.

The death-rate of 1909, corrected for age and sex distribution, has been only 12·36 per 1000, compared with 18·3, 15·01, and 14·72 in the three last quinquennial periods. The average rate for the last four years has been 13·18 per 1000. The death-rate of England and Wales in 1909 was 14·5 per 1000, so the comparative mortality figure of the Borough was 852, that of England and Wales being 1000. With the exception of the year 1899, when the death-rate was 11·7 per 1000, the rate of 1909 is the lowest recorded. The corrected rate for the Rural District of South Westmorland was 11·3 per 1000 in 1909.

ZYMOTIC MORTALITY.—For the first time in the history of the Borough there has been no death attributed to any of the principal epidemic diseases.

PHTHISIS MORTALITY.—For the fifth time in seven years the rate has been below 1 per 1000, and is about one-third what it was 40 years ago.

There can be no doubt that the treatment of phthisis at the Meathop Sanatorium, and the inculcation there of a knowledge of the best means to be adopted by the patient and his friends to prevent the spread of disease, after he returns to his home, is now beginning to be manifest in results. The teaching of the advantage of sunlight, pure air, and good food is carried home, and thus, apart altogether from any means to be taken to prevent the spread of infection by an infected person, there grows up a sense of the importance of environment in the causation of phthisis. As people desire to live a long and healthy life, they will endure many sacrifices to secure a healthy dwelling, and will no longer remain in the dark, low-ceilinged dwellings which were the homes of their ancestors. With an active and interested public opinion, there is no doubt that a vigorous administration of the Housing and Town Planning Act will secure popular support.

INFANT MORTALITY—Last year I had to note a great increase in the mortality of infants, due, to a considerable degree, to the prevalence of measles and whooping cough in the district. In 1909, the absence of epidemic disease has helped to reduce the rate of infant mortality to 78 per 1000 births.

NOTIFICATION OF BIRTHS ACT, 1907.—This Act, having been adopted by the Council, came into operation on the 16th of August last. It requires that all births shall be notified to me within 36 hours, as well stillborn children as those born alive. Between that date and the 31st December, 124 births were notified, seventy-two having been attended by Medical Practitioners and fifty-two by certified Midwives. Nine were stillborn, and eight died after birth. In accordance with the arrangement entered into by the Council with the Kendal Home Nursing Association, all notified particulars were reported to the Society's Nurse, who calls each morning at the office in the Town Hall. She visited all the houses at which she thought her presence would be acceptable and her advice valued; but, of course, did not visit houses at which the Medical Attendant stated in writing that her services were not needed. She reports having visited 190 cases. Whilst the great majority of the infants seem to be breast-fed, I regret to note that it appears to be an almost universal practice for the baby to sleep in the same bed with its parents. As the returns, so far examined, refer to children born in the last four months of the year, autumn and winter seasons, possibly we may not have so large a proportion when the records of a complete year are reviewed. For two and a half years past we have had the



advantage of the services of a Health Visitor provided by the Home Nursing Association. Without having speedy official knowledge of births occurring in the district such as we now possess, she used her best endeavour to ascertain in what houses there had been recent births, and visited those in which she thought her services would be appreciated or her advice valued. Judging by the reception that she has had in the homes of the working classes generally, I think there can be no doubt that she has been materially instrumental in restraining wastage of infant life in Kendal.

CHILD MORTALITY.—The death-rate under five years of age has gone down to the low figure of 21·1 per 1000, at which it stood in 1907, instead of standing between 37 and 47 per 1000, as it did from 1891 to 1905. Possibly the diminishing birth-rates of the last few years have reduced, to a considerable extent, the number of children in the Borough under five years of age, compared with the enumeration of 1901. At the Census of that year there were in Kendal only 130 males, between 20 and 40 years of age, per 1000 of the population, whilst there were 158 females at the same age-period per 1000 of the population. This disparity in sex distribution compared to an average English population, is so great that its effect in producing the present make-up of the population must be most marked. Nothing but a new Census will solve the problem, and meanwhile one feels inclined to put a low value on all statistical information..

ADULT MORTALITY.—The rate of 5·9 is the lowest we have ever had, though it varies but little from the rates of the two previous years. Still it is lower by one-sixth than it was in the 15 years ending 1905.

OLD-AGE MORTALITY.—This rate is practically the average of the past 15 years—just a little higher, but very little.

THE AGES AT AND CAUSES OF DEATH are set out in tables IV. and V. of the Local Government Board, on page 16. There is nothing exceptional in either table, but the excess of deaths from heart disease. Doubtless the heavy rainfall and the consequently wet clothing of persons who are employed out of doors, predisposes to rheumatism, and that, as years pass on, is followed by heart disease. Perhaps acts requiring violent exertion in performing work in a hilly district like this, also impair the nutrition of what might otherwise be a healthy heart.

## CAUSES OF AND AGES AT DEATH.

The following table, being Table IV. of the Local Government Board, gives this information :—

CAUSES OF DEATH.	Deaths in or belonging to whole District at subjoined ages.								Recorded Death Rates per 1000 of total inhabitants.	Total Deaths in Public Institutions in the District.
	All ages.	Under 1 year.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and up- wards.			
Enteric Fever ... ..	..	...	...	...	...	...	...	...	...	1
Epidemic Influenza ... ..	5	1	1	...	...	...	3	35	..	..
Diarrhoea... ..	1	1	..	...	...	...	...	07	...	...
Enteritis ... ..	2	1	1	...	...	...	...	14	...	...
Gastritis ... ..	2	2	...	...	...	..	.	14	...	...
Puerperal Fever... ..	1	...	...	...	...	1	...	07	...	...
Phthisis (Pulmonary Tuberculosis) ... ..	12	...	...	1	1	9	1	84	1	1
Other Tubercular Diseases	8	2	3	...	1	2	...	56	1	1
Cancer, Malignant Disease	8	...	...	...	...	4	4	56	1	1
Bronchitis ... ..	10	1	1	...	...	5	3	70	1	1
Pneumonia ... ..	14	5	1	1	...	5	2	98	5	5
Premature Birth... ..	3	3	...	...	...	...	...	21	...	...
Heart Diseases ... ..	25	..	...	...	1	11	13	176	1	1
Accidents... ..	4	..	1	...	...	2	1	28	...	...
Suicides ... ..	4	..	...	...	...	3	1	28	1	1
Apoplexy... ..	11	...	...	...	...	4	7	77	...	...
All other Causes... ..	69	6	2	1	...	18	42	487	7	7
All Causes ... ..	179	22	10	3	3	64	77	1265	19	19

## INFANTILE MORTALITY DURING THE YEAR.

Deaths from stated Causes in Weeks and Months under One Year of Age.

CAUSES OF DEATH.		Under 1 Week.	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 1 Month.	1-2 Months.	2-3 Months.	3-4 Months.	4-5 Months.	6-7 Months.	7-8 Months.	8-9 Months.	10-11 Months.	11-12 Months.	Total Deaths under 1 Year.
All Causes {	Certified ...	4	2	2	..	8	1	3	2	1	2	1	2	..	..	20
	Uncertified ...	..	..	..	1	1	..	..	..	1	..	..	..	..	..	2
Diarrhœal Diseases—																
Diarrhœa, all forms ...		..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Enteritis, Muco-enteritis, Gastro-enteritis,...		..	..	1	..	1	..	..	1	..	..	..	1	..	..	3
Wasting Diseases—																
Premature Birth ... ..		2	..	..	1	3	..	..	..	..	..	..	..	..	..	3
Congenital Defects ... ..		..	1	..	..	1	..	..	..	..	..	..	..	..	..	1
Atrophy, Debility, Marasmus...		..	..	..	..	..	..	..	1	..	..	..	..	..	..	1
Tuberculous Diseases—																
Tuberculous Meningitis ...		..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Tuberculous Peritonitis: Tabes Mesenterica...		..	..	..	..	..	..	..	..	..	..	1	..	..	..	1
Other Causes—																
Convulsions ... ..		1	1	..	..	2	1	..	..	1	..	..	..	..	..	4
Bronchitis ... ..		1	..	..	..	1	..	..	..	..	..	..	..	..	..	1
Pneumonia... ..		..	..	1	..	1	..	1	..	..	2	..	1	..	..	5
Other Causes ... ..		..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
All Causes ... ..		4	2	2	1	9	1	3	2	2	2	1	2	..	..	22

## INFECTIOUS DISEASES.

The cases notified to me were as shown in the following table :—

## CASES OF INFECTIOUS DISEASE NOTIFIED DURING THE YEAR.

Notifiable Disease.	Cases Notified in Whole District.							No. of cases removed to Hospital.
	At all Ages.	At Ages—Years.						
		Under 1	1 to 5	5 to 15	15 to 25	25 to 65	65 and upwards	
Diphtheria (including Membranous Croup)	13	...	1	5	5	2	...	9
Erysipelas ... ..	18	...	...	...	1	12	5	...
Scarlet Fever ... ..	39	...	9	22	6	2	...	37
Enteric Fever ... ..	2	...	...	...	...	2	...	1
Puerperal Fever ... ..	1	...	...	...	1	...	...	...
Phthisis ... ..	16	...	1	6	6	3	...	...
Totals ... ..	89	...	11	33	19	21	5	47

## NOTIFIED OR ASCERTAINED INFECTIOUS DISEASE.

Year.	Small-pox.	Scarlet Fever.	Diphtheria and Membranous Croup.	Enteric Fever.	Continued Fever.	Erysipelas.	Puerperal Fever.	Total.	Phthisis.
1890	0	10	10	22	1	13	0	56	...
1891	0	41	5	39	1	23	2	111	...
1892	0	32	2	29	5	26	2	96	...
1893	2	186	3	51	4	36	2	284	...
1894	0	236	10	10	1	50	4	311	...
1895	0	71	5	11	1	28	2	118	...
1896	0	8	6	6	1	23	1	45	...
1897	0	4	14	19	1	24	1	63	...
1898	0	8	21	18	1	20	1	69	...
1899	0	18	20	13	0	23	1	75	...
1900	0	93	3	6	0	23	0	125	16
1901	0	88	5	7	0	19	2	120	26
1902	8	258	7	7	1	23	1	305	27
1903	10	107	16	9	0	19	1	162	23
1904	0	399	11	9	0	17	0	436	17
1905	31	111	2	4	1	20	0	169	21
1906	0	23	6	1	0	19	1	50	17
1907	0	22	2	3	0	5	0	32	5
1908	0	88	9	2	0	14	0	122	9
1909	0	39	13	2	0	18	1	73	16

Phthisis voluntarily notifiable after September 25th, 1900.

## HOSPITAL ISOLATION.

Persons resident in the Borough spent 2391 days in the Sanatorium whilst suffering from infectious diseases during the past year, and persons residing outside the Borough spent 2669 days in isolation there, so that 47 per cent. of the patients were Borough cases. There were 36 patients in residence on the night of 31st December, 1908, 99 were admitted during the year 1909, and eight remained under treatment on the night of 31st December, 1909.

The following table shows the number of patients treated during the year, where they came from, and from what diseases they suffered :—



Month.				PATIENTS ADMITTED.								Days' Residence.		Mean No. of patients in residence
				Scarlet Fever.		Typhoid Fever.		Diphtheria		Total.				
				From Kendal.	From other districts.	From Kendal.	From other districts.	From Kendal.	From other districts.	From Kendal.	From other districts.	From Kendal.	From other districts.	
In Sanatorium prior to January 1, 1909				28	8	...	...	...	...	...	...	...	...	...
January	...	...	...	7	2	...	...	1	...	8	2	651	212	27.83
February	..	...	...	6	2	...	...	1	...	7	2	337	181	18.5
March	...	...	...	4	9	..	...	..	..	4	9	303	259	18.12
April	...	...	...	3	...	...	...	...	...	3	...	146	171	10.56
May	..	...	...	...	1	...	...	1	..	1	1	90	41	4.22
June	...	...	...	3	1	..	1	2	..	5	2	85	43	4.26
July	...	...	...	4	1	...	...	...	...	4	1	141	57	6.38
August	...	...	...	3	3	...	...	...	1	3	4	160	66	7.29
September	...	...	...	3	15	1	...	...	...	4	15	152	258	13.66
October	...	...	...	2	8	...	...	1	1	3	9	138	680	26.38
November	...	...	...	1	4	...	...	3	..	4	4	110	480	19.66
December	...	...	...	1	2	..	...	...	1	1	3	78	221	9.64
Totals				37	48	1	1	9	3	47	52	2391	2669	13.86

Year	PATIENTS ADMITTED.												Mean No. of patients in resi- dence.
	Smallpox		Diphtheria and Membranous Croup		Erysipelas		Scarlet Fever		Enteric Fever		Measles		
	From K'dal	From other dist'cts	From K'dal	From other dist'cts	From K'dal	From other dist'cts	From K'dal	From other dist'cts	From K'dal	From other dist'cts	From K'dal	From other dist'cts	
1882	...	...	...	..	...	...	9	...	...	...	...	...	...
1883	...	..	..	..	...	...	3	1	8	...	...	...	...
1884	1	...	3	...	...	...	...	...	26	...	...	...	...
1885	...	...	1	...	1	...	3	...	5	...	...	...	...
1886	...	...	...	...	..	...	4	...	4	...	...	1	...
1887	...	...	...	...	...	...	11	3	1	...	...	...	...
1888	5	...	1	...	...	...	23	3	8	...	...	...	..
1889	...	...	1	1	...	...	7	...	15	...	...	...	...
1890	...	...	...	...	...	...	8	...	4	1	...	...	...
1891	...	...	1	...	...	..	29	9	16	3	...	...	..
1892	...	..	...	2	...	...	26	5	5	3	...	...	...
1893	2	...	...	...	...	...	130	6	2	...	...	...	...
1894	..	...	..	...	...	...	140	16	...	...	...	...	14'1
1895	...	...	2	...	...	...	62	20	1	1	...	..	12'1
1896	...	...	3	...	...	...	4	16	3	5	...	...	5'4
1897	...	...	5	2	...	...	5	15	18	5	...	...	5'1
1898	...	...	9	...	...	1	11	6	9	3	...	...	4'4
1899	...	...	6	9	...	...	16	19	11	4	...	...	7'5
1900	...	...	...	...	...	...	89	21	5	1	...	...	12'7
1901	...	..	1	9	...	...	77	31	1	2	..	..	15'4
1902	8	...	2	2	...	...	237	56	3	1	...	...	41'4
1903	10	..	5	...	...	...	100	23	...	3	...	...	19'9
1904	...	...	2	1	..	...	314	23	...	...	..	...	38'1
1905	31	...	...	1	...	...	94	72	3	1	...	...	22'7
1906	...	...	1	1	...	...	16	22	1	...	...	...	7'2
1907	...	...	1	5	1	...	15	19	1	3	...	...	5'3
1908	...	...	4	5	...	...	81	29	2	2	...	...	13'1
1909	...	...	9	3	...	..	37	48	1	1	...	...	13'86



## MEDICAL INSPECTION OF SCHOOL CHILDREN.

Down to the end of 1909, sixteen months had elapsed since the systematic inspection of school children commenced in the Borough. Whether or not that inspection has been the means of prolonging life or has only made certain children healthier, and therefore the more receptive of knowledge, and more responsive to the efforts of the teacher, I cannot say. Whilst the School Medical Officer considers the health of the children whom he finds within the school, the Medical Officer of Health has regard not only to those children which, being aggregated together, may become a focus of infection, the ramification of which might extend widely into other homes and other villages, but he has to regard conditions affecting or likely to affect the health of all other members of the community. Here is abundant opportunity for overlapping and waste of energy unless steps are taken to prevent it. Thirteen years ago the School Teachers of the county (all districts of the county for which I act as Medical Officer of Health) commenced a voluntary notification to me of cases of infectious disease. Since 1908, a regulation of the Board of Education has provided that every Teacher shall notify all cases of infectious disease, as well to me as to the School Medical Officer. In order to make the system complete, it has been my practice to advise the School Medical Officer of all cases notified to me under the Infectious Diseases Notification Acts, and, when such cases have been inquired into, to inform him of all facts connected with them which could by any reasonable probability affect the health of Teachers or school children. Formerly I used to give Teachers and School Managers such advice as I considered necessary, either as to the exclusion of particular school children or the closure of schools; but now, except in exceptional circumstances, I consult with the School Medical Officer, and leave the executive action to him, regarding it as far better that he should be considered by both Teachers and Managers as the recognised authority on school affairs pure and simple. I have always said that, with co-operation, during the school term, between Teacher and Medical Officer of Health, we have the most effective system for the detection of infectious disease. In these days of mild and, in many cases, almost unrecognisable disease, a Teacher knows what is wrong, or has a shrewd suspicion, long before the patient is ill enough to cause the parent to consult a doctor—especially if he lives several miles away.

The Local Government Board now requires me to furnish, for their information and guidance, a number of details regarding facts recorded in the office in the Inspector of Nuisances, and I have therefore asked him to embody them in his report, which follows this. He has done so most fully, and has also set out in a masterly manner a summary of the work in his department, as well as of points raised at the Conference and Exhibition on Smoke Abatement, held at Sheffield in March last, at which he was present.

### OVERCROWDING.

I desire especially to direct the attention of the Council to Inspector Jackson's observations on overcrowding, as the facts have come to his notice. Such a state of affairs must of necessity be injurious to health, although mortality does not directly result. I would suggest that the tacit permission of such conditions on account of the poverty of the people, producing, as it must do, coarseness and immorality, is in profound contrast to the action of a community which spends large sums of money on education and the medical inspection of the children, in order to obtain the best educational results.

### SMOKE NUISANCE.

I can entirely confirm the observations of the Inspector on the question of smoke nuisance. There is no doubt that, especially immediately before meal times, large quantities of coal are thrown into furnaces in order to save the trouble of a frequent firing, the consequence being black smoke for unnecessarily long periods.

### PHTHISIS AND DISINFECTION.

In order to secure immediate notice of each death due to phthisis, I would suggest that the Registrar of Deaths be paid his small special fee for notification of such death, so that an official offer of disinfection of premises and clothing may be made to the householder before the funeral takes place, and all the domestic cleansing has been completed by the householder. Then it is frequently too late to secure the disinfection, which, it must be understood, is not compulsory after a death from phthisis.

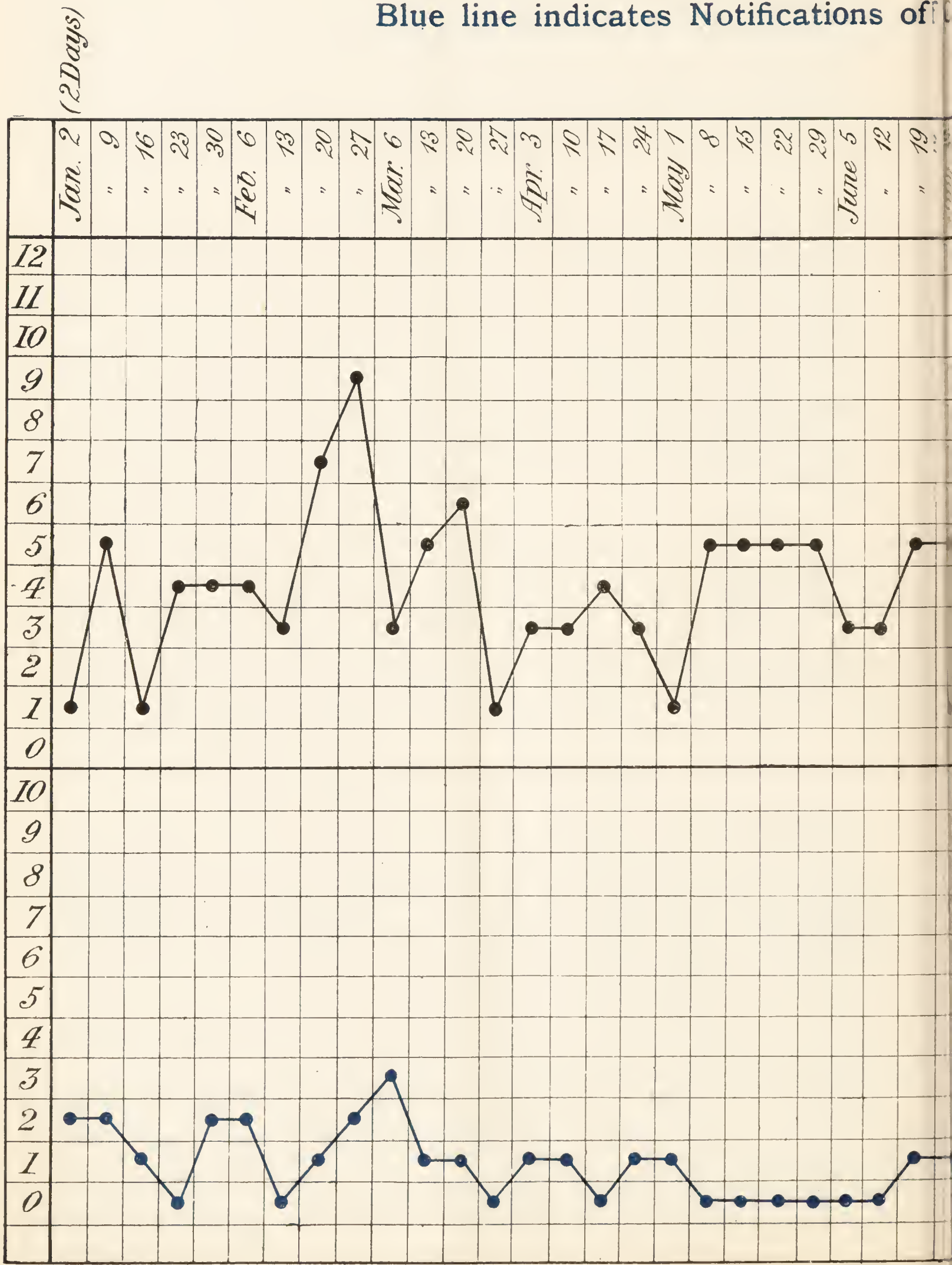
The following tables show the ages and occupations of the known cases of phthisis within the district at the end of December, 1909 :—

No. of known cases in Kendal	...	...	45
Males	...	...	28
Females	...	...	17



Black line indicates TOTAL DEATHS

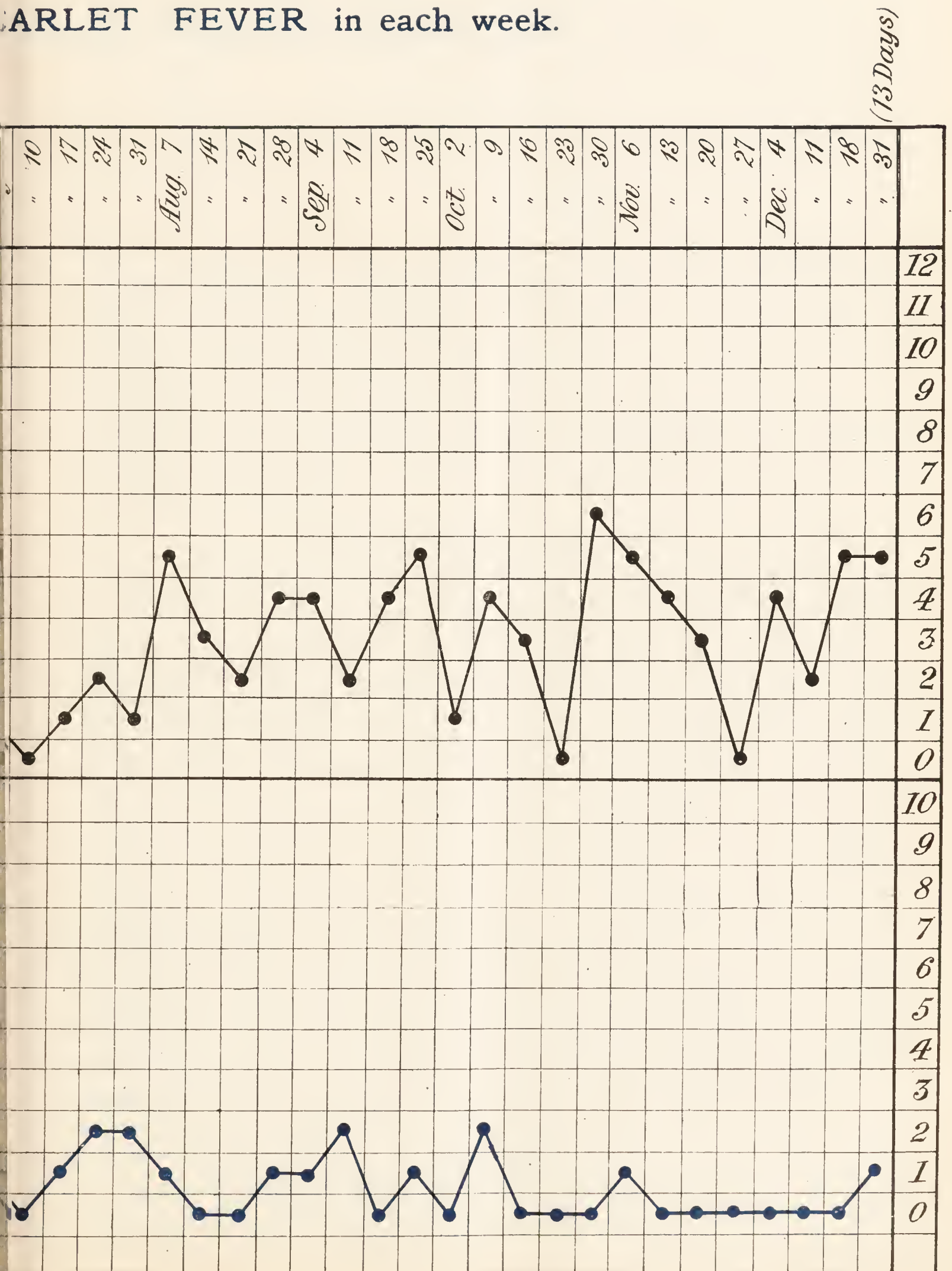
Blue line indicates Notifications of cases





IS from all causes.

ARLET FEVER in each week.





		Ages of Males.			Females.
Under 5 years	..	...	1	...	1
5—10 years	...	...	5	...	2
10—15 „	...	...	2	...	1
15—20 „	...	...	5	...	2
20—25 „	...	...	6	...	4
30—40 „	...	...	4	...	6
40—50 „	...	...	5	...	1
			—		—
			28		17
			—		—

Present occupation of males : Boot Finisher, 1 ; Tobacco Operatives, 3 ; Clerk, 1 ; Draper, 1 ; Labourers, 4 ; Bobbin Turner, 1 ; Hawker, 1 ; Weaver, 1 ; Errand Boys, 2 ; Mason, 1 ; Curriers' Apprentice, 1 ; Tailor, 1 ; Waller, 1 ; School, 7 ; None, 1—Total, 28.

Present occupation of females : Married Women, Household, 4 ; Domestic Service, 5 ; Weaver, 1 ; Seamstress, 1 ; Knitter, 1 ; Tobacco Operative, 1 ; School, 4—Total, 17.

### THE HOUSING QUESTION.

It is a very complex one in an old town like Kendal, and I think it may be possible, in isolated cases, to adopt Inspector Jackson's suggestion to pull down alternate houses in a row in order to let in light and cross currents of air. The more defective of two houses may not be found at the point where the air gap ought to be created. I fear the piecemeal plan of dealing with insanitary areas is a very dear one, as an investment. A complete cash statement of the repair and improvement expenses, and of the rents actually received from many old properties in Kendal during the past 20 years, would show how unwise it is to spend money in improving properties which are 200 or 300 years old, which were not originally substantially constructed buildings. Owners should have received within 200 years both interest and sinking fund on their original outlay ; if not, they should make up their minds it is now too late to secure it. Some years ago—on several occasions—I dealt with the question of paving some yards and covering others with flags or tar-macadam, in order to secure dryness and cleanliness of the surrounding ground. It needs to be done in many places.

### FLOODING.

Some years ago, I also suggested that means be adopted to prevent flooding of the river between Stramongate Bridge and Low Mills. At my

request, Inspector Jackson has ascertained that, during the floods of October and December, the cellars of no less than 67 houses in Aynam Road, Parr Street, and Lound Street were flooded. These are all good class houses which are constantly occupied by tenants, not crumbling dark, damp cottages.

### CONTROL OF TUBERCULOSIS.

The Westmorland Consumption Sanatorium, at Meathop, is available for the reception of cases of phthisis resident in Kendal, and, in the course of a few weeks, such accommodation will not only be available for cases which are expected to benefit by residence there, but also for those cases which are advanced and require to be isolated with the object of preventing the spread of the disease to other members of the household. During the year nineteen patients from the Borough were admitted to the Sanatorium, and seven of them remained under treatment on the 31st of December, 1909.

### GENERAL INSPECTION.

During the past year the Inspection Sub-Committee of the Health Committee has continued its labours, and has thus been instrumental in bringing before the Committee a full and accurate personal knowledge of all the more important matters which the Inspector has had to report. With the coming into force of the Housing and Town Planning Act, 1909, the importance of this Sub-Committee will be accentuated, for the Act imposes great responsibilities upon the Council, in fact, places them in a judicial capacity in which they have not heretofore had to act.

R. MUSGRAVE CRAVEN, D.P.H., Camb.,

Medical Officer of Health.

April, 1910.



## ANNUAL REPORT OF THE INSPECTOR OF NUISANCES.

*To the Mayor, Aldermen, and Councillors of the Borough of Kendal.*

Gentlemen,

I beg to submit the Annual Report of the work done by the Sanitary Department during the year ending December 31st, 1909.

## ADMINISTRATION OF PUBLIC HEALTH ACTS.

386 formal notices to abate nuisances or comply with other requirements of the Public Health Acts and the Bye-laws in force in the Borough were served, a summary of which will be found below :—

## DRAINAGE AND PAVEMENTS.

Defective or Choked Drains	...	...	...	...	34
„ Gullies	...	...	...	...	5
„ surface of Yards	...	...	...	...	5

## DWELLINGS.

Houses dirty and requiring limewashing	...	...	...	2
„ insufficiently ventilated	...	...	...	18
„ with defective floors, walls, or roof	...	...	...	13
„ with insufficient water supply	...	...	...	5
„ overcrowded	...	...	...	11
„ unfit for human habitation	...	...	...	6
„ with defective eaves or down spouts	...	...	...	15
„ with defective sinks or wastes	...	...	...	13

## WATER CLOSETS.

Defective Water Closets	...	...	...	...	52
Insufficient W.C. accommodation	...	...	..	...	1
Defective Soil Pipes	...	...	...	...	4
Dirty and requiring limewashing	...	...	...	...	13
With insufficient water supply	...	...	...	...	6
Defective Pan Closet	...	...	...	...	1

## PRIVIES, ASHPITS, AND ASHBINS.

Defective Privies	...	...	...	...	17
„ Ashpits	...	...	...	...	2
„ Ashbins	...	...	...	...	82

Defective Pail Closets	...	...	..	...	4
„ Earth Closets	...	...	...	...	1
„ Cesspools	..	..	..	...	3

#### FACTORIES AND WORKSHOPS.

Want of Drainage of Floors	...	...	...	...	1
Insufficient W.C. accommodation	...	...	...	...	4
Unsuitable or Defective W.C. accommodation	.	...	...	...	13
W.C. accommodation not separate for sexes	...	...	...	...	1
Other defects	...	...	...	...	2
Bakehouse, defective floor	..	...	..	...	1
„ requiring limewashing	.	...	...	..	1
Want of means of escape in case of fire	..	..	...	...	1
Smoke Nuisance	...	...	...	...	2

#### VARIOUS.

Accumulation of Offensive Refuse	...	...	...	..	27
Animals or Poultry kept so as to be a nuisance...	...	...	..	...	4
Stables without proper middens	...	..	...	..	5
„ „ „ drainage	...	...	...	...	5
Cowsheds requiring limewashing	...	...	...	..	1
Marine Store kept so as to be a nuisance	.	...	...	...	1
Canal Boat, various defects	...	...	...	...	4
Total	...	...	...	...	386

29 statutory notices were served in cases where the preliminary notice had not been complied with.

I must again draw attention to the overcrowding evil. Although only 11 notices were served, several other cases came under observation and were dealt with without notice being served. The following are samples taken to illustrate the kind of cases dealt with :—

- (1). The house contained two bedrooms; one bedroom was used for bird-keeping, the other bedroom, with a capacity of 540 cubic feet, was occupied by a man, his wife, and three children.
- (2). The house contained two bedrooms; one with a capacity of 744 cubic feet and the other with a capacity of 465 cubic feet; the larger room was occupied by a man and wife, the wife being in the last stage of phthisis. The smaller room was occupied by three adult male lodgers.

- (3). The house contained two bedrooms; one with a capacity of 960 cubic feet, and the other with a capacity of 412 cubic feet; the larger room was occupied by a man, his wife, and five children. The smaller room was used for bird-keeping.

An adult male lodger, who had recently come out of the Consumption Sanatorium, slept on the stairs, where there was neither light nor ventilation.

- (4). The house contained two bedrooms; one with a capacity of 510 cubic feet, the other with a capacity of 359 cubic feet; the larger bedroom was occupied by a man, his wife, and two children. The smaller bedroom was occupied by a female lodger and her three children, aged 13, 10, and 5 years.

- (5). The house contained two bedrooms, with a total capacity of 756 cubic feet; it was occupied by two families consisting of four adults and six children.

In seven out of eleven cases in which notices were served, it was found that members of more than one family were occupying the house.

With regard to Smoke Nuisances, I am afraid that much progress cannot be reported. Only two notices were served during the year, but a circular letter was sent to all steam users, drawing their attention to the nuisance caused by the emission of black smoke.

Observations taken, both by members of the Smoke Abatement Subcommittee and myself, have shown that it is quite common for black smoke to be emitted for six or seven minutes consecutively. The difficulty of dealing with this matter is explained in my report to the Health Committee, dated 19th March, 1909, on my visit to a Smoke Abatement Conference at Sheffield.

#### PROSECUTIONS.

It was necessary in only two instances to take proceedings before the Justices for breaches of the Public Health Acts. The first case was that of a house in Peppercorn Lane, the sink waste of which discharged directly into Blindbeck. In this case the Justices made an order on the owner requiring him to cause the sink waste pipe to discharge into a drain connected to the sewer.

The second case arose out of a complaint from 10 inhabitants, under section 114 of the Public Health Act, 1875, that a Marine Store in Entry Lane was a nuisance. In this case the Justices made an order on the occupier requiring him to abate the nuisance, by concreting the floor and cementing the walls of the premises.

## INFECTIOUS DISEASES AND DISINFECTION.

110 rooms in 75 houses, in which cases of infectious disease had occurred, were disinfected by fumigation. Of this number, 22 were houses in which cases of phthisis occurred, disinfection being carried out in 11 cases after the death of the patient, in 10 cases after removal to the Consumption Sanatorium, and in one case after removal to another house. It is gratifying to note that the objection to disinfection after phthisis is being gradually overcome. Disinfectants are supplied to all the Elementary schools, and systematic floor disinfection has been carried out by the caretakers.

The Sanatorium has been maintained in an efficient manner, and the buildings are in good repair. Two new bedrooms for the Staff have been constructed over the Ambulance House, and a hot water supply has been provided for the baths in the scarlet fever block. The steam disinfectors are in good condition, and have been used on 105 days.

## HOUSING OF THE WORKING CLASSES.

It has to be admitted that the progress that has been made in this matter of the better housing of the poorer classes during the year has been small; one reason for this has been the fact that we were anticipating that the Housing and Town Planning Bill would become law; in that case much greater powers for dealing with this matter would be possessed by the Authority. This Bill received the Royal Assent on December 3rd, 1909, and takes effect from that date, so that next year I hope to be able to report much more progress. During the year 6 notices only were served under the Housing of the Working Classes Acts; two of these were in respect to dwellings at Far Cross Bank W., and four with respect to dwellings at Captain French Lane. The former were complied with and the houses made habitable, and the latter are still under the consideration of the Health Committee. Four houses closed by order of the Justices, in 1907, and 6 houses closed voluntarily by the owners, in 1908, still remained unrepaired and unoccupied.

With our stationary or decreasing population, there is adequate housing accommodation for the working classes, although a large percentage of the houses cannot by any means be called desirable dwellings. In the narrower yards there is a lack of open space around the houses, and consequently there is no proper circulation of air, and in many cases insufficiency of light. Short of the drastic remedy of taking down a whole row of houses to improve two other rows, the best means of obtaining more light and



ventilation would be to deal with every third house as an obstructive building, and pull it down, leaving an open space. By this means cross ventilation between the yards would be effected.

The immediate surroundings of many houses are not conducive to cleanliness, being improperly paved or not paved at all. This want of proper paving is the cause of dampness in the walls of many houses.

Overcrowding has been dealt with in another portion of this report and I am of opinion that this is caused, in the majority of cases, by poverty and not the lack of houses.

No houses for the labouring classes have been built within recent years.

### FACTORIES AND WORKSHOPS.

#### (1) *Inspection.*

			Inspections.		Notices.		Prosecutions.
Factories	...	...	59	...	8	...	0
Workshops	...	...	276	...	16	...	0
Workplaces	...	...	42	...	2	...	1
Homeworkers Premises	..		15	...	0	...	0
			<hr/> 392	...	<hr/> 26	...	<hr/> 1
			<hr/>		<hr/>		<hr/>

#### (2) *Defects Found.*

Nuisances under the Public Health Acts :—

Want of Drainage of Floors	...	...	...	1
Other Nuisances	...	...	...	4
Insufficient w.c. accommodation	...	...	...	4
Sanitary accommodation unsuitable or defective			...	13
„ not separate for sexes	...		...	1
Breach of sanitary requirements for Bakehouses	...		...	2
Want of means of escape in case of fire	...		...	1
			<hr/> 26	<hr/>

#### (3) *General.*

Workshops on register	...	...	...	171
Underground Bakehouses	...	...	...	2
Homeworkers registered	...	...	...	3
Defects notified by H.M. Inspector	...	...	...	11

## CANAL BOATS ACTS, 1877 &amp; 1884.

During the year ending December 31st, 1909, 27 visits of inspection were made to 16 Canal Boats.

The following defects were discovered and remedied, on notice being served on the owner :—

Cabin roof defective	...	...	...	...	1
„ floor „	...	...	...	...	1
Absence of water cask	...	..	...	...	1
Cabin requiring painting	...	...	...	...	1
					—
			Total	...	4
					—

With the exception of one, the boats were all in good condition and kept in a cleanly state.

Children were carried on five of the boats inspected.

No cases of Infectious Disease were notified or discovered in any boat.

There are no boats in use on the register of the Local Authority.

## DAIRIES, COWSHEDS, AND MILKSHOPS.

No. of Purveyors of Milk on Register, 1908	...	...	...	50
No. Registered during 1909	...	...	...	5
				—
				55
No. discontinued Milkselling	...	...	...	4
				—
			Total	...
				51
				—
No. of Cowkeepers on Register	...	...	..	12
No. of Cowsheds	...	...	...	14

During the year 89 visits of inspection were paid to Cowsheds within the Borough. One notice to cleanse and limewash was served.

On December 1st, 1910, the new regulation, fixing the minimum amount of air space per cow at 600 cubic feet, will come into force. In anticipation of this, two new Cowsheds have been constructed, one at Oxenholme farm and the other at Bird's Park farm. Minor alterations have been carried out at other Cowsheds, but there are still seven which will either require alterations to increase their cubic capacity or a smaller number of cows will have to be kept so as to comply with the new regulations.

The greater portion of our milk supply comes from outside the Borough, where we have no control over the condition of the Cowsheds.

No action has been taken by this Authority, nor, as far as I am aware, by any other Authority in the district, to cause dairy cows to be examined by Veterinary Surgeons for the detection of tuberculous cows.

No samples of milk were examined bacteriologically for the presence of tubercle bacilli.

#### SALE OF FOOD AND DRUGS.

15 samples of milk were taken during the year and submitted to the Public Analyst.

The results of the analyses are classified below :—

Unusually rich in milk fat	...	..	...	...	1
Average samples	...	...	...	...	8
Below average, but containing more than 3% milk fat	...				4
Just upon the minimum limit for milk fat	...				1
Below the limit for milk fat	...	...	..	..	1
					<hr/> 15 <hr/>

The last mentioned sample contained the parts as under :—

Milk-fat	...	..	...	...	2.62
Non-fatty solids	...	...	...	...	8.75
Water	...	...	...	...	88.63
					<hr/> 100.00 <hr/>

The milk-fat is 0.38 per cent. below the limit for milk-fat fixed by the Sale of Milk Regulations, 1901, and taking the limit as the basis of calculation 12.6 per cent. of the milk-fat originally present had been abstracted. Proceedings before the Justices were taken against the vendor, who pleaded that the milk was sold in the same state as it was taken from the cow, and that its poorness was caused by the cold weather. The Justices dismissed the case.

#### SLAUGHTER HOUSES AND MEAT INSPECTION.

307 visits of inspection were paid to the Public Slaughter House and the one private Slaughter House. The inspections are made, as far as possible, at the time of slaughtering, and a considerable amount of time is taken up by this work. The numbers of animals slaughtered at the Public Slaughter House during 1909 were :—

Cattle.		Sheep.		Pigs.		Calves.
818	...	6377	...	1300	...	78

Compared with 1908, this is an increase of 10 cattle and 913 sheep, and a decrease of 55 pigs and 22 calves.

The number of cattle slaughtered at the private Slaughter House was 312.

The carcases of 30 cattle and 1 pig were found to be affected with tuberculosis in varying stages, and were dealt with as follows :—

Portion destroyed.				Number of cases.	
Complete carcase and viscera...	...	...	...	...	1
Fore quarters and viscera (pig)	...	...	...	...	1
Complete viscera	...	...	...	...	5
Lungs, liver, and diaphragm	...	...	...	...	1
Lungs and diaphragm	...	...	...	...	3
Liver and diaphragm	...	...	...	...	1
Lungs and liver	...	...	...	...	4
Lungs	...	...	...	...	11
Liver	...	...	...	...	4
					—
					31
					—

Of the 30 cattle affected, 16 were milch cows and 14 heifers. The following meat was also destroyed :—

Head, tongue, and lungs of cow affected with actinomycosis	...	...	...	1
Lungs, liver, heart, and kidneys of heifer affected with sarcoma	...	...	...	1
Livers of cattle affected with flukes	...	...	...	11
Carcase of sheep (emaciated)	...	...	...	1
Fore quarters of sheep	...	...	...	2
Head, lungs, liver, and heart of sheep	...	...	...	4
Heart of calf	...	...	...	1

The whole of the above-mentioned meat was destroyed by consent of the owner, and it was not necessary in any case to obtain an Order of a Justice for destruction.

HOUSE REFUSE REMOVAL.

ASHPITS.

No. of Ashpits Emptied.		No. of Loads.		No. of Loads Deposited at Parkside.		Limekilns.	
2457	...	1371	...	1086	...	285	



## ASHBINS AND SHOP REFUSE.

No. of Loads.	No. of Loads Deposited at		
	Parkside.		Limekilns.
2288	...	1872	...
Total number of loads removed	...	...	3659
Average weight per load (estimated)	...	...	25 cwt.
Weight of refuse removed	..	...	4574 tons.
Cost per ton for removal	...	..	2/2 $\frac{1}{4}$
„ „ disposal	...	...	0/5 $\frac{1}{4}$

The work of refuse removal and disposal is still carried out by the Council's own employees. Very few complaints of neglect have been received, and the work is, on the whole, satisfactorily carried out. Roughly speaking two-thirds of the refuse is collected from ashbins, and one-third from ashpits and middens. The ashpits are decreasing in number each year and the ashbins increasing.

No. of ashpits, emptied weekly	...	...	...	6
„ „ fortnightly	...	...	...	5
„ „ monthly	...	...	...	17
„ „ 6 times per annum	...	...	...	61
„ „ 4 „ „	...	...	..	364
Total				453

Ashbins are emptied weekly and in some districts twice weekly. Fish offal is collected daily, without any charge being made. The number of ashbins in use is about 1600.

During the year the Local Government Board sanctioned the adoption of bye-laws for imposing on the occupiers of premises duties in connection with the removal of house refuse, so as to facilitate the work of collection. The main provision of the bye-laws is that, if the Council so desire, all refuse must be placed in galvanized iron bins. No action has yet been taken under these bye-laws.

In September, application was made to the Local Government Board for sanction to borrow £2000 for the provision of a Refuse Destructor in Canal Road South. There was considerable opposition to the scheme at the inquiry, the proposal was withdrawn, and the scheme abandoned.

The owners of the Refuse Tip, at Parkside Road, have agreed to vary the conditions of the lease with regard to the level to which the field may

be filled with refuse, and arrangements have now been made whereby the present tip may be filled to a much higher level than was at first contemplated. By making these new arrangements it is expected that this tip will meet all our requirements for some years. The lower portion of the slope behind the Sanatorium is now being filled in with refuse, and it is proposed to plant a poplar hedge between the Sanatorium and the tip to form a screen.

#### EXCREMENT DISPOSAL.

##### *Privies.*

Although part 3 of the Public Health Acts Amendment Act, 1907, is in force, no action under secs. 39-42 with regard to the conversion of privies into water closets has been taken. During the year only 8 privies were converted, as compared with 21 privies and 5 pail closets converted during the previous year. The numbers of privies and pail closets converted into water closets during the past five years are :—

		Privies.		Pail Closets.
1905	...	26	...	29
1906	...	33	..	17
1907	...	20	...	8
1908	...	21	...	5
1909	...	8	...	0
		<hr/>		<hr/>
	Totals	108	...	59
		<hr/>		<hr/>

From the above figures it will be seen that the number converted each year has gradually decreased. This is accounted for by the fact that all the worst privies have now been converted, and of those remaining the majority cannot be said to be serious nuisances.

There is one point, however, which should not be overlooked, and that is, that recent investigations have shown how the common house fly is the carrier of many diseases, and that its chief breeding places are privies and other places where decaying organic matter is found. Having regard to these facts, it is very desirable that no efforts should be spared to bring about the conversion of all privies and pail closets into water closets. The above remarks apply also to those ashpits which are only emptied at intervals of more than 10 days, and there is no doubt that, if ashbins were substituted for ashpits, and a weekly collection of all refuse carried out, the health of the district would be benefited. The provision of an ashbin by

the Council, free of cost in each case where an ashpit was abolished, would hasten this desirable state of affairs.

There are still remaining in the Borough :—

Privies where there is no other accommodation	..	...	59
„ „ also a w.c.	...	...	21
„ outside the sewerage area, & cleansed by the Council			8
Pail Closets	...	...	25

In addition to the above-mentioned privies there are about 15 in the outlying portions of the Borough which are cleansed by the occupiers.

#### WATER-CARRIAGE.

The whole of the district is well sewered, with the exception of a few outlying portions and a few farm houses. There are only about 40 houses in the district which are not drained into the Corporation sewers, and these houses are provided with cesspools.

The following is a summary of the water closets in use in the Borough :

Wash-down and wash-out water closets	...	...	2785
--------------------------------------	-----	-----	------

Trough closets flushed with clean water—

5 ranges of 6	...	...	30
7 „ 5	...	...	35
17 „ 4	...	...	68
13 „ 3	...	...	39
7 „ 2	...	...	14
		186	...
			186

Trough closets flushed with slop water—

1 range of 4	...	...	4
3 „ 3	...	...	9
2 single closets	...	...	2
		15	.. 15

Total water closets of all descriptions	..	...	2986
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GEO. JACKSON,  
Inspector of Nuisances.

APPENDIX TO THE ANNUAL REPORT OF THE  
INSPECTOR OF NUISANCES, 1909.

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*Report on Smoke Abatement submitted to the Health Committee, March, 1909.*

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I beg to submit a report on my visit to the Smoke Abatement Conference and Exhibition, at Sheffield, on March 8th and 9th, 1909.

The Conference which was held on the 8th was attended by the representatives of about 25 Local Authorities.

Four papers were read, viz. :—

1. —Smoke Abatement by distribution of Electrical energy.
2. —The Calorimetric Control of the Supply and Consumption of Fuel.
- 3.—Powers, Duties, and difficulties of Local Authorities in abating Smoke Nuisances.
- 4.—Sunshine and Smoke.

The first two papers were not of much interest from the smoke abatement point of view, except that the writer of the first advocated the increased use of Electrical Energy as one means of abating the smoke nuisance.

The paper on the Powers and Duties of Local Authorities, by Mr. Lawrence W. Chubb (Secretary of the Coal Smoke Abatement Society), of which the following is a brief résumé, was both interesting and instructive:—

It was greatly to be regretted that the L.G.B., which was entrusted with the duty of compelling Local Authorities to enforce the provisions of the P.H.A. with regard to nuisances, had set the example of disobedience by refusing to exercise the powers placed in its hands, and it was unfortunately the case that, where the Local Authority chose to defy the law and neglect its duty, it had hitherto been done with impunity.

If the L. G. B. were to intervene in the case of a few delinquents, and charge upon them the cost of enforcing the law, less would be heard in the future of authorities neglecting the performance of their statutory duties.

Although the law with regard to smoke nuisances appeared adequate, experience had proved that many difficulties of a practical nature arose in carrying it out. Many Local Authorities complained of the difficulty of securing convictions in cases where there was no Stipendiary Magistrate.



It was pointed out that in many cases the proceedings in connection with smoke prosecutions were heard by magistrates who will probably be found to comprise manufacturers not immune from similar offences themselves, or at least friends of the defendants, or persons who laboured under the delusion that black smoke cannot be avoided. The fines inflicted should be far higher than had hitherto been the case, and they should be doubled for each recurring offence. Manufacturers would speedily find means for preventing the emission of black smoke, if they found it cheaper to do so than go on fouling the air.

The Sanitary Inspector was placed in a very unsatisfactory position when, as was often the case, the offenders in the district under his supervision included members of the authority by which he was employed. It was desirable that the Sanitary Inspector should be placed entirely under the control of the Local Government Board.

Although the issue of any black smoke was illegal, it would be unreasonable to expect that when furnaces were first lighted, or recharged, no smoke at all should be emitted; but there should be a period fixing an hourly limit during which smoke might be emitted, and it seemed important that a common standard should be agreed upon, for the present manner in which the matter was dealt with gives rise to glaring anomalies. Thus, at Leeds, the emission of black smoke for an aggregate period of 3 minutes in an hour was held to be sufficient to justify action, while at Middlesbrough, until recently at all events, the period was 15 minutes.

While the fixing of the time limit might, from some points of view, be unwise, it must be borne in mind that it would be far less difficult to obtain a conviction, were a fixed time limit imposed, than was the case at present, when magistrates had their own views as to what constituted a nuisance.

The principal difficulty which Local Authorities had to face in administering the law was connected with the proof of the colour of the smoke. It is true that the issue of "black smoke" was "per se" a nuisance, but differences of opinion existed as to what constituted "black smoke."

The Inspector could not scientifically prove the colour of the smoke, but could only state that, in his judgment, it should be called "black." Where rebutting and perhaps the technical evidence of expert engineers was called to disprove the opinion of the Inspector, the difficulty of securing a conviction was greatly enhanced, although the smoke undoubtedly created a nuisance and from the popular standpoint was "black." In short,

“black” was a relative term, and what one person would consider “black,” another would consider “grey.”

The Coal Smoke Abatement Society had come to the conclusion that an effort should be made to secure the amendment of the Public Health Act, 1875, by the deletion of the word “black.” All that would then be necessary to secure a conviction would be to show that smoke was emitted in such quantity as to be a nuisance.

At present, notices should be served under sub-section 8 of section 91, Public Health Act, 1875, i.e., “Any chimney (not being the chimney of a private dwelling house) sending forth black smoke in such quantity as to be a nuisance, shall be deemed to be a nuisance liable to be dealt with summarily.”

In any proceedings taken under this sub-section it is not necessary to prove that the furnaces are not so constructed as to consume their own smoke or that they were negligently used; the only evidence that need be adduced is that black smoke was emitted from a certain chimney for a certain length of time.

The paper on “Sunshine and Smoke,” by Mr. E. Howarth, gave interesting statistics as to how smoke affected the amount of sunshine in various towns. If the sky were clear there should be about 4,000 hours of sunshine per year.

Of 11 seaside places Jersey had the highest average for the past four years with 47 per cent. of the total available sunshine; Scarborough being the lowest with 37 per cent., and the average of the 11 towns being 43 per cent. per year. The average for a number of well-known inland resorts was 35 per cent.

Of the manufacturing towns Sheffield came top with 35 per cent., and Manchester lowest with 25 per cent.

The average for these manufacturing towns was 31 per cent., which was 4 per cent. below inland residential towns and 12 per cent. below the average of seaside towns.

The following resolution was moved and adopted :—

“That a provisional Committee, consisting of representatives of Local Authorities, manufacturers, and voluntary associations, be and is hereby formed to consider the question of smoke abatement, and to take steps to put the movement on a permanent and national basis.”

In Sheffield the time limit for the emission of black smoke has been fixed by resolution of the Council, and is as follows :—

A single boiler is allowed two minutes of black smoke per hour.

Two boilers, 3 minutes per hour.

Three boilers, 4 minutes per hour.

Four boilers and over, 6 minutes per hour.

Notices are served under sub-section 8 of section 91, Public Health Act, 1875 ; but before any notice is served offenders are warned and given the result of observations taken on various days.

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